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WORLDWIDE EMERGING ENVIRONMENTAL ISSUES AFFECTING THE U.S. MILITARY

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SEPTEMBER 2009 REPORT

Note to Readers: Pages 1-11 comprise the summary and analysis of this report. Expanded details for some items are in the Appendix beginning on page 12.

Item 1. Climate Change at the UN and G-20

Climate change was the focus of several international summits held in September 2009: the UN Climate Change Summit that attracted 100 Heads of State and Government and was convened by UN Secretary-General Ban Ki-moon, the Climate Change Summit of the Alliance of Small Island States (ASOIS), the UN General Assembly, the G-20 summit, and additional international forums held in parallel with these summits. Although the issues discussed ranged from addressing economic crises to disarmament and reforming the UN system, the theme most mentioned was climate change and policies to address its causes and effects, including adaptation and setting emission reduction targets. The AOSIS underscored security implications of climate change and asked for a greater say in the related negotiations. Vanuatu's Prime Minister Edward Natapei emphasized that "climate change poses a real threat to the future survival of mankind." French President Nicholas Sarkozy reiterated the call for creation of a new World Environment Organization to replace the current several disparate agencies and committees. UN reform ideas converged towards a more representative Security Council and more powerful General Assembly so that its resolutions are implemented and legally binding.

Military Implications:
The military should identify all its resources and programs for reducing GHGs and responding to effects of climate change, update information continuously, forecast how it might be called upon for both mitigation and adaptation, and perform a gap analysis in anticipation of future requests. International discourse over climate change is increasing the development of international policies and strategies to mitigate and adapt to climate change.

Sources: (see an expanded list in the Appendix)
General Debate of the 64th Session; 23-26 & 28-30 September 2009
http://www.un.org/ga/64/generaldebate/2309.shtml
Leaders' Statement: The Pittsburgh Summit
http://www.pittsburghsummit.gov/mediacenter/129639.htm
Ahead of Copenhagen talks, small island nations sound alarm at UN on climate change
http://www.un.org/apps/news/story.asp?NewsID=32265&Cr=climate+change&Cr1

Item 2. Chemicals Management to Address Emerging Technologies-related Issues

The Secretariat of Strategic Approach to International Chemicals Management (SAICM) released an update on current emerging policy issues related to: nanotechnologies and manufactured nanomaterials, hazardous substances within the life cycle of electrical and electronic products, chemicals in products, and lead in paint. These were adopted by Resolution II/4 at the second session of the International Conference on Chemicals Management. SAICM, in collaboration with OECD and the UN Institute for Training and Research (UNITAR), will organize during 2010 a series of regional informative workshops on potential applications and risks associated with nanotechnologies and nanomaterials, as well as capacity assessment, and awareness building. Submissions for emerging policy issues are welcome and would be considered at the next Conference, scheduled for June 2012.

Military Implications:
Relevant military personnel should follow the work of SAICM both for collaboration and preparedness for eventual new regulations.

Sources:
Emerging policy issues - ICCM2 outcomes and follow-up
http://www.saicm.org/index.php?menuid=9&pageid=392&submenuheader=
Update on SAICM implementation – emerging policy issues. 2 September 2009
http://www.saicm.org/documents/iccm/ICCM2/September09%20update-rev%20on%20emerging%20issues.pdf

Item 3. Draft European Transboundary Guidance on Water and Adaptation to Climate Change

The Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention) of the UN Economic Commission for Europe (UNECE) is preparing a draft Guidance on water and adaptation to climate change, the first of its kind looking at adaptation from a transboundary perspective. The Guidance will cover impacts of climate change on water quantity and quality, assessment of risks, and addressing vulnerability and adaptation strategies in the UNECE region and beyond. The draft Guidance will be submitted to the fifth session of the Meeting of the Parties to the Water Convention, to be held November 10–12, 2009 in Geneva.

Military Implications:
The Guidance might provide a framework to military involved in activities related to climate change adaptation and mitigation involving transboundary waters in Europe.

Sources:
Draft Guide to implementing the Convention
http://www.unece.org/env/documents/2009/Wat/mp_wat/ECE_mp.wat_2009_L2_%20E.pdf
Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Fifth session, 10-12 November 2009
http://www.unece.org/env/water/mop5.htm

Item 4. Technological Advances with Environmental Security Implications

4.1 New Detection and Cleanup Techniques

4.1.1 Neurotoxins Detected/Neutralized by New Fast Molecular Configuration
A new type of organophosphate neurotoxin sensor molecule that detects such neurotoxins as sarin up to10^5 times faster than previous reagents was developed by researchers from the Scripps Research Institute in La Jolla, CA. The detector also renders the toxin harmless, and signals its activity by significantly increasing the intensity of its fluorescence.

Military Implications:
The military should follow this development as it progresses toward use in a practical integrated system for detecting and destroying organophosphate toxins.

Sources:
Hydroxy Oximes as Organophosphorus Nerve Agent Sensors
http://www3.interscience.wiley.com/journal/122597479/abstract? (abstract)
Ring closure as warning - new, extremely fast detection of neurotoxins
http://www.nanowerk.com/news/newsid=12678.php

4.1.2 New Ultra-sensitive Detector for Water-borne Hazards

A new semiconducting-nanotube-based chip that reliably detects very low concentrations (ppb) in water of TNT or a chemical relative of sarin has been developed by researchers from the Dept. of Chemical Engineering at Stanford University. According to the principal investigator, Prof. Zhenan Bao, the new device "offers a rare combination of low-cost materials, low power usage, robust and repeatable performance in water, instant response and physical flexibility," and its technology is applicable to a wide variety of target compounds.

Military Implications:
The military should follow this technique as it evolves for environmental testing of water for significant contaminants.

Sources:
Cheap, sensitive carbon nanotube sensors could detect explosives, toxins in water
http://www.nanowerk.com/news/newsid=12779.php
Sorted and Aligned Single-Walled Carbon Nanotube Networks for Transistor-Based Aqueous Chemical Sensors
http://pubs.acs.org/doi/abs/10.1021/nn900808b

4.1.3 New Color Matrix Sensor Array Warns of Toxic Gases

As part of the NIH Genes, Environment and Health Initiative, Prof. Kenneth S. Suslick and colleagues at the University of Illinois at Urbana-Champaign have developed what they characterize as an 'optoelectronic nose.' The system uses a postage stamp-sized 6×5 array of sensor dots, each of which signals the presence of one or more particular toxins by changing color. According to Prof. Suslick, "The pattern of the color change[s in the whole array] is a unique molecular fingerprint for any toxic gas and also tells us its concentration. By comparing that pattern to a library of color fingerprints, we can identify and quantify the TICs in a matter of seconds." Tests were run on a set of 19 toxic industrial chemicals.

Military Implications:
The military should follow this development for its applicability to fast, accurate environmental scanning.

Sources:
Postage stamp-sized electronic nose sniffs out poisonous gases
http://www.nanowerk.com/news/newsid=12593.php
An optoelectronic nose for the detection of toxic gases
http://www.nature.com/nchem/journal/vaop/ncurrent/abs/nchem.360.html

4.1.4 Dirty Bomb Treatment Technology Developed in U.K.

Scientists in the UK have developed a suitcase-sized device that could help fast treatment of large numbers of people following exposure to a radiological 'dirty bomb.' The device could test 30 samples per hour, determining the level of cellular damage a person is suffering following exposure to radiation.

Military Implications:

The military should explore the new UK device as a component for evaluating health damage to victims of acute radiation exposure and to facilitate collaboration with "first responders."

Sources:

'Dirty bomb' breakthrough
http://www.independent.co.uk/news/science/dirty-bomb-breakthrough-1786616.html

4.2 A New Water Management Tool

The Mapping Evapotranspiration with High Resolution and Internalized Calibration (METRIC) tool, developed by the Idaho Department of Water Resources and the University of Idaho, offers specific measurements of the water consumed across a region. Using surface temperature readings from satellites, air temperature, and a system of algorithms, the tool allows measurement of water quantities consumed on a certain piece of land through "evapotranspiration" (water that leaves the land for the atmosphere.)

Military implications:

The tool might be useful to military personnel with environmental responsibilities and water resource management to monitor and regulate water consumption (mostly in arid and semi-arid regions where water supply might not be sufficient for all uses.)

Sources:

Washington Post: Water Measured From the Sky
http://www.washingtonpost.com/wp-dyn/content/article/2009/09/13/AR2009091302368.html
The Idaho Department of Water Resources
http://www.idwr.idaho.gov/

4.3 Electric Vehicle Powered by Sodium-Nickel-Chloride Batteries

The prototype of Electric Daily, the first zero emission light commercial vehicle produced in Latin America was presented by Iveco in Brazil. The prototype uses three Zebra Z5 sodium, nickel, and chloride batteries claimed to be completely recyclable and not producing gaseous emissions.

Military implications:

The military should consider examining this electric vehicle technology, along with other electric prime movers that might be under evaluation.

Source:

Iveco launches the Daily Electric in Brazil
http://www.iveco.com/en-us/PressRoom/PressRelease/Pages/DailyElettricoBrasile.aspx

Item 5. Updates on Previously Identified Issues

5.1 UN Mission Assessment of Gaza Conflict Included Environmental Impacts

The UN Mission assessment of the December 2008–January 2009 Gaza conflict found evidence that both Israeli forces and Palestinian militants committed actions that could be violations of international law. The 575-page report, "Human Rights in Palestine and Other Occupied Arab Territories; Report of the United Nations Fact Finding Mission on the Gaza Conflict," includes impacts on the environment and public health. The Mission assessed particularly the use of white phosphorous, fléchette missiles, DIME (dense inert metal explosive) munitions, and depleted uranium. The Mission "…believes that serious consideration should be given to banning the use of white phosphorous in built-up areas" (par. 897). Similarly, it notes that DIME weapons injuries might raise the risk of cancer (par. 904). The report recommended further environmental monitoring under UN auspices and underlined that a detailed environmental impact assessment is being conducted by UNEP [see *UN to Conduct Post-Conflict Environmental Assessment in Gaza* in April 2009 environmental security report.]

Military Implications:

These UNEP and UN Mission assessments show increased international concerns over post-conflict liability and redress, mounting pressure for adopting regulations based on the "polluter pays" principle, mainly concerning environmental damages in war, as well as for increased precision in attacks, to decrease environmental impact. Additionally, recommendations could lead to bans on some weapons and materials such as white phosphorous and/or DIME.

Sources:

Human Rights in Palestine and other Occupied Arab Territories. Report of the United Nations Fact Finding Mission on the Gaza Conflict (Advance Edited Version; A/HRC/12/48)
http://www2.ohchr.org/english/bodies/hrcouncil/specialsession/9/docs/UNFFMGC_Report.pdf
UN Fact Finding Mission finds strong evidence of war crimes and crimes against humanity committed during the Gaza conflict; calls for end to impunity
http://www.unhchr.ch/huricane/huricane.nsf/view01/9B63490FFCBE44E5C1257632004EA67B?opendocument

5.2 UN Security Council Resolution on the Comprehensive Nuclear Test Ban Treaty

The UN Security Council endorsed a resolution aiming to advance global nuclear disarmament. Measures include: discouraging withdrawal from the Nuclear Nonproliferation Treaty, increasing membership in the Comprehensive Nuclear Test Ban Treaty, and creating additional nuclear weapon-free zones. Non-compliance with the Nuclear Nonproliferation Treaty would be referred directly to the Security Council for possible punitive action, rather than to the International Atomic Energy Agency. [Related items: *Entire Southern Hemisphere Covered by Nuclear-Free Zone Treaties* in August 2009, *Advancements on Non-proliferation and Nuclear Disarmament* in May 2009 and other previous items in environmental security reports.]

Military Implications:

The military should stay abreast of these developments as they relate to planning and materiel. It should also assess all the opportunities to facilitate the NPT negotiations and international cooperation to improve nuclear safety, as well as recommend policy, training, and institutional or physical changes to implement the resolution.

Sources:
U.N. Security Council Approves Nuclear Resolution
http://gsn.nti.org/gsn/nw_20090924_4766.php
Fact Sheet on the United Nations Security Council Summit on Nuclear Nonproliferation and Nuclear Disarmament UNSC Resolution 1887
http://www.whitehouse.gov/the_press_office/Fact-Sheet-on-the-United-Nations-Security-Council-Summit-on-Nuclear-Nonproliferation-and-Nuclear-Disarmament-UNSC-Resolution-1887/

5.3 Observation and Information System for the World's Oceans to be Created

Confirming that a systematic scientific analysis of the oceans and seas is needed, the OceanObs'09 (for ocean observatories) meeting held September 21-25, 2009, at Venice, Italy decided to build a comprehensive observation system for monitoring the marine environment, assessing longer term trends and promoting sustainable marine resources management. UNESCO announced that the first globally integrated oceans assessment system could be delivered under the auspices of the UN by 2014. In the meantime, the U.S. National Science Foundation and the Consortium for Ocean Leadership have signed a Cooperative Agreement as the next step toward construction of the Ocean Observatories Initiative, "a network of ocean observing components, and their associated cyberinfrastructure, that will allow scientists to examine ocean processes on global, regional and coastal scales." [Related items: *World Database on Marine Protected Areas* in June 2009 and *"Roving" Marine Protected Areas as Climate Change Affects Migration* in March 2008.]

Military Implications:
Appropriate military personnel should establish liaison with these projects to take advantage of their eventual capabilities for global surveillance of the maritime environment and to provide know-how and support. These systems are likely to contribute to enforcing existing maritime regulations, as well as to trigger eventual new ones based on new data to be collected.

Sources:
'Assessment of Assessments' (of the oceans)
http://www.unga-regular-process.org/index.php?option=com_content&task=view&id=18&Itemid=20
OceanObs'09 Conference
http://www.oceanobs09.net/
Ocean Observatories Initiative Receives Award
http://www.oceanleadership.org/2009/ocean-observatories-initiative-receives-award/

5.4 Synthetic Gene Ordering Security Screening Up for Discussion

A proposed Code of Conduct for the DNA synthesis services industry is scheduled to be discussed and possibly adopted at the International Association of Synthetic Biology's (IASB) Second Annual Industry Workshop on Technical Solutions for Biosecurity in Synthetic Biology in Cambridge MA on November 3, 2009. The IASB developed such a code, but a similar but less rigorous and less costly process is advocated by two leading companies, raising safety concerns among scientists. A UC Berkeley scholar characterizes it as "a standards war that is a race to the bottom." [Related item: *New Technologies Need New Regulations Systems* in March 2009 and other items on this issue in previous environmental security reports.]

Military Implications:
Military personnel concerned with biosecurity should consider actively participating in these discussions, in which, reportedly, no government agency has offered an opinion, although a number have been working on the problem.

Sources:
Gene-synthesis industry at odds over how to screen DNA orders
http://www.k8science.org/news/news.cfm?art=5579
K8 Science
http://www.K8Science.org
IASB Workshop
http://www.ia-sb.eu/go/synthetic-biology/activities/press-area/press-information/workshop-on-synthetic-biology/

5.5 Hazardous Waste Disposal of Increasing Concern

According to the European Environment Agency, paper, plastic, and metal trash exported from Europe rose tenfold from 1995 to 2007, with 20 million containers of waste now shipped each year; either legally or illegally. In 2008, the Netherlands returned 80 illegal shipments to their countries of origin. Hong Kong authorities say that about 100 containers of waste arrive daily from the US and Canada. Recently, Italian mafiosi confessed that that they have been disposing of toxic waste by putting it onboard ships and then deliberately sinking the vessels. [Related items: *Organized Crime Targets Electronic Waste Recycling* in July 2009, *Toxic Waste Disposal of Global Growing Concern* in September 2006 and other environmental security reports.]

Participants in the first international E-Waste Summer School, in Eindhoven, Netherlands, September 6-11, recommended adopting global policies and standards for recycling electronic products to avoid illegal and harmful e-waste processing practices in developing countries.

Military implications:
Military personnel might be called upon to collaborate in the efforts to counter illegal export, dumping, and dismantling of hazardous waste. Military installations should continue reviewing and improving their handling of outdated or waste electronic materiel to ensure that it is being disposed of in the most environmentally safe manner, including reuse and recycling.

Sources:
Smuggling Europe's Waste to Poorer Countries
http://www.nytimes.com/2009/09/27/science/earth/27waste.html
Mafia 'sank ships of toxic waste'
http://news.bbc.co.uk/1/hi/8257912.stm
Set world standards for electronics recycling, reuse to curb e-waste exports to developing countries
http://www.physorg.com/news172237477.html

5.6 Climate Change

5.6.1 Scientific Evidence and Natural Disasters

By 2060, the global average temperature could rise by 4°C (7.2°F), unless sound greenhouse gas emission reduction strategies are implemented, revealed a study by the UK Met Office, prepared for the Department of Energy and Climate Change. Nevertheless, UNEP's "Climate

Change Science Compendium 2009" estimates that even in the best case scenario—if the world's most ambitious targets are met—the planet will still warm by 3.5°C (6.3°F) by the end of the century. The calculations consider the upper-range targets of nearly 200 nations' climate policies (e.g. U.S. emissions reduction of 73% from 2005 levels by 2050, EU 80% from 1990 levels by 2050). The report also notes that sea level might rise by 6 feet by 2100 instead of 1.5 feet, as projected by the IPCC.

The August 2009 ocean surface temperature was the warmest since 1880, when record keeping began. The average ocean surface temperature for June–August was 16.9°C (62.5°F), which is 1.04°F above the 20th century average, according to NOAA's National Climatic Data Center. For the same period, the combined global land and ocean average surface temperature was 16.2°C (61.2°F), the third warmest on record, and 1.06°F above the 20th century average.

5.6.2 Food and Water Security

By 2050, to feed 9.1 billion people, world food production should increase by 70% and withdrawal of water for irrigation by almost 11%, notes FAO in a paper prepared for the high-level experts forum and World Summit on Food Security to be held in October 2009. Given that 90% of the growth in crop production is projected to come from higher yields and increased cropping intensity, even small changes in precipitation and/or crop yield due to climate change could have devastating impacts on food security in the world.

A study by the Asian Development Bank warns that if current trends persist until 2050, the yields of irrigated crops in South Asia will decrease significantly and resulting food scarcity will lead to higher prices and reduced caloric intake across the region. Under this scenario, per capita calorie availability in 2050 will be below levels recorded in the year 2000. Afghanistan, Bangladesh, India, and Nepal are identified as particularly vulnerable to falling crop yields caused by glacier retreat, floods, droughts, erratic rainfall, and other climate change impacts. The study, "Addressing Climate Change in the Asia and Pacific Region: Building Climate Resilience in the Agriculture Sector," was officially launched by ADB on the sidelines of the UNFCCC meeting held in Bangkok, September 28-October 9, 2009.

Researchers reiterated a warning that growing corporate control over seeds is reducing the diversity of traditional seed varieties and traits that help farmers adapt to the effects of climate change, jeopardizing poor farmers' livelihoods. They suggested that farmers would benefit from a similar legal protection over their traditional seed varieties and associated knowledge as do corporations through the international treaty on the protection of new varieties of plants. Researchers from the International Institute for Environment and Development (IIED) and partner organizations in China, India, Kenya, Panama and Peru launched the warning ahead of the 2nd World Seed Conference held September 8-10, 2009, in Rome, Italy.

A prolonged drought is sweeping across Kenya, thought to be a result of the El Niño cycle worsened by global warming and continued degradation of forest ecosystems. Crops have been destroyed, and domestic and wild animals are dying, negatively affecting the two key industries: agriculture and tourism. Four million Kenyans face mass famine, and foreign aid is reluctantly provided and inadequate. Tensions are spawning ethnic conflict as communities fight over the last remaining pieces of fertile grazing land.

5.6.3 Health

WHO notes that while 37 of the least developed countries admit the link between population growth and climate change, only six of them identify family planning as part of their adaptation

strategy. A study of the first 40 National Adaptation Programmes of Action (NAPAs) shows that only 7% of 448 projects across the 40 NAPAs were in the health sector. At the same time, *Lancet* notes that over 200 million women worldwide lack access to contraceptives. Remedying this, could prevent 76 million unintended pregnancies a year, reducing demographic pressure on the environment. A study by the London School of Economics estimates that $7 spent on family planning would reduce carbon emissions by one ton, while low carbon technologies cost an estimated $32 per ton reduced ($24 for wind power, $51 for solar, $57-83 for coal plants with carbon capture and storage, $92 for plug-in hybrid vehicles, and $131 for electric vehicles).

Researchers warn of increased incidence of dengue fever, which sickens over 50 million and kills 24,000 worldwide every year. The main causes are population growth, increased traveling, and global warming disrupting the natural cold temperature processes that limit the population of dengue carrying mosquitoes.

5.6.4 Melting Glaciers and Sea Ice

Findings outlined in the UNEP report "Climate Change Science Compendium 2009" reveal that mountain glacier melting seems to be accelerating. If current trends continue, most glaciers from the mountains of tropical Africa will disappear by 2030, and those from the Pyrenees by 2050. Similarly, most models project that by 2030, the Arctic Ocean might be ice-free in September. The Greenland ice sheet surface melting rate was some 60% higher in the summer of 2007 than the previous record in 1998.

NOAA's National Climatic Data Center noted that Arctic sea ice cover was an average of 6.3 million sq kilometers (2.42 million sq miles) during August, 18.4% below the 1979-2000 average.

5.6.5 Rising Sea Levels

UNEP reassessment of potential sea level rise based on the combined effects of melting land-ice and thermal expansion of oceans reveals a rise of 0.8–2.0 meters above the 1990 level by 2100, and 5–10 times that over following centuries.

According to an analysis based on ten years of global daily satellite images, 85% of the world's 33 largest delta regions experienced severe flooding due to sinking land and rising seas. The study warns that if ocean levels increase as projected under the moderate climate change scenarios, delta land vulnerable to serious flooding could expand by 50% this century, Asia being the worst affected. The study was led by the University of Colorado at Boulder.

5.6.6 Migration

In 2008, climate-related natural disasters displaced about 20 million people, compared to 4.6 million who were internally displaced by conflicts, revealed a UN report compiled by the UN Office for the Coordination of Humanitarian Affairs and the Internal Displacement Monitoring Centre. Trying for the first time to quantify the number of people displaced by climate change, the UN study estimates that out of the total of 36 million people displaced by rapid-onset natural disasters, 15 million were due to the Sichuan earthquake, while 90% of the others were due to floods, storms, drought and other climate change-related phenomena.

5.6.7 Computer Modeling

Climate-Rapid Overview and Decision Support Simulator (C-ROADS) is a new climate change model, developed by the Sustainability Institute, aiming to help policymakers assess the greenhouse gas emissions implications of their strategies. The forecasts show that unless all nations take dramatic steps to reduce greenhouse gas emissions, temperature and sea level rises will be unacceptably high by the end of the century.

Scientists participating at the conference Climate Forcing of Geological and Geomorphological Hazards, September 15-17, 2009, outlined evidence that global warming could cause geological disturbances, which can result in earthquakes, tsunamis, avalanches, and volcanic eruptions. Although linking earth's sensitivity to climate is only emerging and more data is needed to build predictive climate models linking the two systems, the evidence is there, say scientists.

5.6.8 Adaptation

The "World Economic and Social Survey 2009" calls for a 'Global New Deal' at the scale of $500-600 billion, compared to the 'woefully inadequate' estimated $21 billion currently allocated internationally for climate change adaptation and mitigation plans. The report presents a range of possible multilateral measures in support of a global investment program, including a global clean energy fund, a global feed-in tariff regime in support of renewable energy sources, and a more balanced intellectual property regime for aiding the transfer of clean technologies. The Christian Aid report "Community Answers to Climate Chaos" estimates that rich countries' overall annual contribution to a proposed Sustainable Development Innovation Facility should be over €110 billion ($161 billion) to help local communities cope with climate change effects.

Similarly, the World Bank's "World Development Report 2010: Development and Climate Change" estimates that by 2030, developing countries will need $75 billion annually for adaptation, and another $400 billion for low-carbon technology development. The report notes that poor nations will bear between 75-80% of the cost of floods, increased desertification and other disasters caused by global warming. Countries in Africa and South Asia are slated to lose as much as 5% of their GDP if temperatures rise just 2°C above pre-industrial levels. The WDR 2010 focuses on the many dimensions of development that are affected by climate change, including: reducing human vulnerability; managing land and water; stimulating development without compromising the climate; harnessing and efficiently using funds for mitigation and adaptation; accelerating the spread of "climate-smart" technologies; and communicating climate change issues to societies.

The World Climate Conference-3 held in Geneva, August 31–September 4, 2009, under the theme "Better climate information for a better future" decided to establish a Global Framework for Climate Services, to improve science-based climate prediction services and long-range seasonal weather projections. This will be an important tool for policymakers in general and for developing nations most vulnerable to the impact of global warming, specifically.

The "Lomé Declaration on Climate Change and Protection of Civilians in West Africa," adopted at the Regional Conference on Protection Challenges to Climate Change in West Africa, from 14-16 September 2009, in Lomé, Togo, calls for broader consideration of the social impacts of climate change through a human rights-based approach. Participants underscored conflicts arising from natural resource depletion and the infringement of displaced people's rights. They also recommended establishment of a special fund to help address climate change-induced

impacts on affected parts of the population; called for measures to protect climate-affected persons; and agreed that a regional platform should be established for information exchange.

5.6.9 Post-Kyoto Negotiations

Some 100 heads of State and Government attended the UN climate change summit one day before the opening of the UN General Assembly's 64th session (September 23rd). Japan's prime minister-elect pledged to cut greenhouse gas emissions by 25% in the next 10 years from 1990 levels. The Climate Change Summit of the Alliance of Small Island States, held on September 21st, adopted the AOSIS Climate Change Declaration, which calls on "urgent progress towards a fair and meaningful Copenhagen outcome." Along the same lines, the G-20 summit agreed on actions such as phaseout over the medium term of inefficient fossil fuel subsidies, which would reduce greenhouse gas emissions by 10% by 2050. In view of almost stalled negotiations for a climate change treaty, French President Nicolas Sarkozy proposed that the leaders of the major industrialized nations hold an extraordinary summit ahead of the December climate conference. The next post-Kyoto treaty negotiations are taking place in Bangkok, Thailand, September 28–October 9, 2009.

Military Implications:
[Same as previous on this issue] The military should identify all its resources and programs for reducing GHGs and responding to effects of climate change, update information continuously, forecast how it might be called upon for both mitigation and adaptation, and perform a gap analysis in anticipation of future requests. International discourse over climate change is increasing the development of international policies and strategies to mitigate and adapt to climate change.

Sources: (see an expanded list in the Appendix)
Four degrees and beyond
http://www.metoffice.gov.uk/climatechange/news/latest/four-degrees.html
NOAA: Warmest Global Sea-Surface Temperatures for August and Summer
http://www.noaanews.noaa.gov/stories2009/20090916_globalstats.html
Global agriculture towards 2050
http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf
Researchers: farmers' rights to adapt to climate change ignored
http://www.chinadaily.com.cn/world/2009-09/07/content_8663923.htm
Sexual and reproductive health and climate change
http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61643-3/fulltext
Dengue becoming unstoppable
http://www.mb.com.ph/articles/219444/dengue-becoming-unstoppable
Impacts of Climate Change Coming Faster and Sooner: New Science Report Underlines Urgency for Governments to Seal the Deal in Copenhagen
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=596&ArticleID=6326&l=en
Natural disasters displacing millions - U.N. study
http://in.reuters.com/article/worldNews/idINIndia-42632820090922?pageNumber=1&virtualBrandChannel=0
C-ROADS: A New Climate Change Model Used By Diplomats
http://www.bgrncol.com/

Climate change may trigger earthquakes and volcanoes
http://www.newscientist.com/article/mg20327273.800-climate-change-may-trigger-earthquakes-and-volcanoes.html?full=true
The World Economic and Social Survey 2009
http://www.un.org/esa/analysis/wess/
World Development Report 2010
http://go.worldbank.org/ZXULQ9SCC0
Nations Appear Headed Toward Independent Climate Goals
http://www.washingtonpost.com/wp-dyn/content/article/2009/09/22/AR2009092201137.html
Bangkok Climate Change Talks – 2009
http://www.iisd.ca/climate/ccwg7/

5.7 Nanotechnology Safety Issues

More detailed descriptions of the following nanotechnology issues are in the Appendix

- *Securing the Promise of Nanotechnologies Towards Transatlantic Regulatory Cooperation*, a report by the international collaborative project Regulating Nanotechnologies in the EU and U.S. (more)
- OECD Nanotech Safety New Publications (more)
- New Paper Suggests Concentrating Toxicity Studies on Smaller Nanoparticles (more)
- Call for Systematic Studies to Link Nanoproperties and Hazards (more)
- Royal Society's Interface Reviews Nanoparticle Risks and Regulation (more)
- Researchers Call for Broad Approach to Nanotube Risk Assessment (more)
- Metallic Impurities Affect Carbon Nanotube Toxicity (more)
- New Inventory Lists More Than1000 Nanoproducts (more)
- First Global On-line Nanotech Conference to be Held 22-25 March, 2010 (more)
- OECD Nanomaterials Working Party to Meet in Paris in October (more)
- New Paper Studies Public Perceptions of Nanotechnology (more)
- Grant in Wales for Nanotoxicology Research to analyze the levels at which nanoparticles can be judged safe within cells. (more)

Item 6. Reports and Information Suggested for Review

6.1 Royal Society Issues Major Geo-engineering Report

"Geoengineering the climate: science, governance and uncertainty" by the UK Royal Society is a comprehensive review of the main geo-engineering options. The 98-page document discusses carbon dioxide removal techniques, solar radiation management techniques, and governance. It also contains a large reference list and a complete glossary. [Related item: *Geo-engineering Promises/Threatens Major Consequences* in June 2009 environmental security report.]

Military Implications:
[Same as previous on this issue] Military personnel who explore longer-range possibilities should explore geo-engineering techniques that could be weaponized and what international frameworks might prevent such abuse.

Sources:
Geoengineering the climate. Science, governance and uncertainty (September 2009)
http://royalsociety.org/displaypagedoc.asp?id=35094
Risky schemes may be only hope for cooling planet: scientists
http://www.physorg.com/print171034934.html

6.2 Energy Security Challenges for the 21st Century

Energy Security Challenges for the 21st Century: A Reference Book provides an "overview of the world's energy system and the vulnerabilities that underlie growing concern over energy security", as well as "various approaches energy producers, consumers and transit states have toward energy security and it examines the domestic and foreign policy tradeoffs required to ensure safe and affordable energy supply."

Military Implications:
This book could be a good source of information and analysis on how energy security could impact world security and which are the vulnerable regions.

Source:
Energy Security Challenges for the 21st Century. A Reference Handbook
http://www.greenwood.com/psi/book_detail.aspx?sku=C9997

6.3 New Flood Center to Develop Warning Systems

Professor Witold Krajewski of the University of Iowa has been named director of the new Iowa Flood Center, which has at the top of its agenda the development of prototype flood warning and forecasting systems to mitigate the effects of future floods. What the engineers and scientists learn is expected to enhance their overall understanding of floods and improve the accuracy of flood warning systems.

Military Implications:
Appropriate military personnel should follow the Center's work in order to apply it to planning for the protection of military installations.

Source:
Better Prediction Sought for Devastating Floods
http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=115479&WT.mc_id=USNSF_1

APPENDIX

Reference Details

This Appendix contains expanded background information on some items.

Item 1. Climate Change at the UN and G-20

Sources: (a more expanded list)
General Debate of the 64th Session; 23-26 & 28-30 September 2009
http://www.un.org/ga/64/generaldebate/2309.shtml
New General Assembly President opens session with call for UN reform
http://www.un.org/apps/news/story.asp?NewsID=32069&Cr=General+assembly&Cr1=
G-20 Leaders Commit to Tackle Energy and Climate Change
http://climate-l.org/2009/09/28/g-20-leaders-commit-to-tackle-energy-and-climate-change/
Leaders' Statement: The Pittsburgh Summit
http://www.pittsburghsummit.gov/mediacenter/129639.htm
Nations Appear Headed Toward Independent Climate Goals
http://www.washingtonpost.com/wp-dyn/content/article/2009/09/22/AR2009092201137.html
Obama, China vow urgent action on climate change
http://www.google.com/hostednews/ap/article/ALeqM5iVseyRMTWU-tI-9-sDhfCCJEk4vgD9ASM0980
Ahead of Copenhagen talks, small island nations sound alarm at UN on climate change
http://www.un.org/apps/news/story.asp?NewsID=32265&Cr=climate+change&Cr1=

5.6 Climate Change

5.6.1 Scientific Evidence and Natural Disasters
Four degrees and beyond
http://www.metoffice.gov.uk/climatechange/news/latest/four-degrees.html
Met Office warns of catastrophic global warming in our lifetimes
http://www.guardian.co.uk/environment/2009/sep/28/met-office-study-global-warming
Impacts of Climate Change Coming Faster and Sooner: New Science Report Underlines Urgency for Governments to Seal the Deal in Copenhagen
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=596&ArticleID=6326&l=en
New Analysis Brings Dire Forecast Of 6.3-Degree Temperature Increase
http://www.washingtonpost.com/wp-dyn/content/article/2009/09/24/AR2009092402602.html
NOAA: Warmest Global Sea-Surface Temperatures for August and Summer
http://www.noaanews.noaa.gov/stories2009/20090916_globalstats.html

5.6.2 Food and Water Security
Global agriculture towards 2050
http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf

How to feed the world 2050 - High-level experts forum
http://www.fao.org/wsfs/forum2050/wsfs-background-documents/issues-briefs/en/
World Food Output Must Rise 70 Percent By 2050 – FAO
http://www.nytimes.com/reuters/2009/09/23/world/international-uk-food-demand-fao.html
Addressing Climate Change in the Asia and Pacific Region; ADB press release
http://www.adb.org/Media/Articles/2009/12973-south-asian-climates-changes/
Researchers: farmers' rights to adapt to climate change ignored
http://www.chinadaily.com.cn/world/2009-09/07/content_8663923.htm
2nd World Seed Conference 2009
http://www.worldseedconference.org/en/worldseedconference/home.html
Lush land dries up withering Kenya's hopes
http://www.nytimes.com/2009/09/08/world/africa/08kenya.html

5.6.3 Health
Sexual and reproductive health and climate change
http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(09)61643-3/fulltext
Fewer emitters, lower emissions, less cost
http://www.optimumpopulation.org/reducingemissions.pdf
Study Finds Family Planning Cheapest Way to Prevent Climate Change
http://www.enn.com/top_stories/article/40476
Contraceptives can reduce impact of climate change says Lancet
http://www.telegraph.co.uk/health/healthnews/6203364/Contraceptives-can-reduce-impact-of-climate-change-says-Lancet.html
Dengue becoming unstoppable
http://www.mb.com.ph/articles/219444/dengue-becoming-unstoppable

5.6.4 Melting Glaciers and Sea Ice
Impacts of Climate Change Coming Faster and Sooner: New Science Report Underlines Urgency for Governments to Seal the Deal in Copenhagen
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=596&ArticleID=6326&l=en
Ocean surfaces have warmest summer on record, US report finds
http://www.guardian.co.uk/environment/2009/sep/16/ocean-temperature-el-nino-noaa

5.6.5 Rising Sea Levels
Impacts of Climate Change Coming Faster and Sooner: New Science Report Underlines Urgency for Governments to Seal the Deal in Copenhagen
http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=596&ArticleID=6326&l=en
World's River Deltas Sinking Due to Human Activity, Says New Study Led by CU-Boulder
http://www.colorado.edu/news/r/b1535ed4a21c33f7dc1d22d241bd5328.html

5.6.6 Migration
Natural disasters displacing millions - U.N. study
http://in.reuters.com/article/worldNews/idINIndia-42632820090922?pageNumber=1&virtualBrandChannel=0

5.6.7 Computer Modeling
C-ROADS: A New Climate Change Model Used By Diplomats
http://www.bgrncol.com/
Climate change may trigger earthquakes and volcanoes
http://www.newscientist.com/article/mg20327273.800-climate-change-may-trigger-earthquakes-and-volcanoes.html?full=true
Climate Forcing of Geological and Geomorphological Hazards
http://www.abuhrc.org/newsmedia/Pages/event_view.aspx?event=5
Aon Benfield UCL Hazard Research Centre
http://www.abuhrc.org/Pages/index.aspx
Climate change: melting ice will trigger wave of natural disasters
http://www.guardian.co.uk/environment/2009/sep/06/global-warming-natural-disasters-conference

5.6.8 Adaptation
The World Economic and Social Survey 2009
http://www.un.org/esa/analysis/wess/
Poor nations need 'wartime' support against climate change: UN
http://www.google.com/hostednews/afp/article/ALeqM5ixZD_wT-1BIN8uvnLkwIE-m1JvfQ
Major new fund needed to boost communities' climate solutions
http://www.christianaid.org.uk/pressoffice/pressreleases/September2009/major-new-fund-needed-for-communities-to-adapt-to-climate-change.aspx
World Development Report 2010
http://go.worldbank.org/ZXULQ9SCC0
World Bank Report Slams 'Inertia' in the Face of Climate Change
http://www.nytimes.com/cwire/2009/09/15/15climatewire-world-bank-report-slams-inertia-in-the-face-18561.html
World Climate Conference Bulletin
http://www.iisd.ca/ymb/climate/wcc3/
Climate Change: Early Warning Systems for the Coming Storm
http://www.ipsnews.net/news.asp?idnews=48278
In Geneva, Designing a Global Climate-Alert System
http://www.time.com/time/health/article/0,8599,1919932,00.html
The Economic Council of Western African States (ECOWAS) press release
http://news.ecowas.int/presseshow.php?nb=090&lang=en&annee=2009

5.6.9 Post-Kyoto Negotiations
UN Secretary-General's speech: http://www.un.org/News/Press/docs/2009/sgsm12464.doc.htm
Climate change declaration:
http://www.sidsnet.org/aosis/documents/AOSIS%20Summit%20Declaration%20Sept%2021%20FINAL.pdf
Islands warn of extinction at UN climate week
http://www.google.com/hostednews/afp/article/ALeqM5hXGjRwt2a9gBiK9pf1pxu-r3199Q
G20 agrees on phase-out of fossil fuel subsidies
http://www.reuters.com/article/GCA-GreenBusiness/idUSTRE58O18U20090926?pageNumber=2&virtualBrandChannel=11604

Sarkozy proposes extra climate summit ahead of Copenhagen
http://euobserver.com/19/28705
Nations Appear Headed Toward Independent Climate Goals
http://www.washingtonpost.com/wp-dyn/content/article/2009/09/22/AR2009092201137.html
Japan's Next Premier Vows to Cut Emissions Sharply
http://www.nytimes.com/2009/09/08/world/asia/08japan.html?_r=1
Japanese carbon cut may sweep away UN who-jumps-first obsession
http://www.brisbanetimes.com.au/world/japanese-carbon-cut-may-sweep-away-un-whojumpsfirst-obsession-20090908-fel9.html
China Changes The Climate Debate
http://www.forbes.com/2009/09/02/china-climate-consumer-tax-opinions-columnists-robyn-meredith.html
Widen global warming fight beyond CO2: U.N.
http://www.reuters.com/article/GCA-GreenBusiness/idUSL449824520090904
Bangkok Climate Change Talks – 2009
http://www.iisd.ca/climate/ccwg7/

5.7 Nanotechnology Safety Issues

More detailed descriptions of the nanotechnology items

5.7.1 Comprehensive report on nanotechnology-related regulatory issues

Securing the Promise of Nanotechnologies Towards Transatlantic Regulatory Cooperation report by the international collaborative project Regulating Nanotechnologies in the EU and U.S., is a comprehensive state-of-the-art overview of aspects related to nanotechnology: environment, health and safety risks; and key regulatory frameworks, issues and challenges—including relevant national and international institutions—in the U.S., EU, and internationally, with specific focus on chemical, food, and cosmetics regulations. The report highlights that although "No efforts have been undertaken as yet to create a formal, treaty-based, international framework for nanomaterials regulation," in the future such an international framework treaty might be needed, given the globalization of nanotechnology developments. It concludes that the EU and the US should play a greater role in developing an international nanotech regulatory framework. Commenting on the report, some experts expressed that nanotechnology and biotechnology would need a complex and flexible regulatory system, due to their unknown evolution and often absence of data. [Reference to the report launch: *Transatlantic Regulatory Cooperation: Securing the Promise of Nanotechnologies* in August 2009 environmental security report.]

Military Implications:

Military personnel concerned with nanotech-related issues should consider the report and the discussions at its launch as reference for potential nanotech regulatory system.

Source:

Securing the Promise of Nanotechnologies: Towards Transatlantic Regulatory Cooperation
http://www.chathamhouse.org.uk/files/14692_r0909_nanotechnologies.pdf
Transatlantic Regulatory Cooperation: Securing the Promise of Nanotechnologies
http://www.wilsoncenter.org/index.cfm?fuseaction=events.event_summary&event_id=544514

5.7.2 OECD Nanotech Safety New Publications

OECD has released several new publications in its series on the Safety of Manufactured Nanomaterials, including "Preliminary Review of OECD Test Guidelines for their Applicability to Manufactured Nanomaterials."

Military Implications:

[Same as previous on similar issues] Military personnel concerned with nanotech risk assessment should review the publications to assess potential implications on their work.

Sources:

OECD adds new publications to its series on the Safety of Manufactured Nanomaterials
http://www.nanowerk.com/news/newsid=12391.php
Preliminary Review of OECD Test Guidelines for their Applicability to Manufactured Nanomaterials
http://www.olis.oecd.org/olis/2009doc.nsf/LinkTo/NT000049AE/$FILE/JT03267900.PDF
Nanotechnology, Synthetic Biology, & Public Opinion A Report Of Findings Based On A National Survey Among Adults
http://www.nanotechproject.org/process/assets/files/8286/nano_synbio.pdf
Nanotechnology, Synthetic Biology, and Biofuels. What does the public think?
http://www.wilsoncenter.org/index.cfm?fuseaction=events.event&event_id=551829

5.7.3 New Paper Suggests Concentrating Toxicity Studies on Smaller Nanoparticles

An on-line paper by researchers from the Center for the Environmental Implications of NanoTechnology (CEINT), Duke University, suggests that particles in the <30 nm section of the 1-100 nm "nano spectrum" should receive the most attention in studying the environmental and human health impacts of nanomaterials, since it is in that high surface-area-to-volume ratio range that possibly hazardous increases in reactivity are more likely to be observed.

Military Implications:

[Same as previous on similar issues] Military personnel concerned with nanotech risk assessment should review this work to assess its possible influence on their plans.

Sources:

When nano may not be nano
http://www.physorg.com/news172072324.html
Towards a definition of inorganic nanoparticles from an environmental, health and safety perspective
http://www.nature.com/nnano/journal/vaop/ncurrent/abs/nnano.2009.242.html

5.7.4 Call for Systematic Studies to Link Nanoproperties and Hazards

A recent paper by Dr. Amanda Barnard of CSIRO Australia discusses a "number of strategies … combining the desirable aspects of theory, simulation, experiment and observation, and leading to predictions for incorporation into preventative frameworks" for mitigation of possible hazards from nanomaterials.

Military Implications:
[Same as previous on similar issues] Military personnel concerned with nanotech risk assessment should review this paper to aid in planning their activities.

Sources:
Computational strategies for predicting the potential risks associated with nanotechnology
http://www.rsc.org/Publishing/Journals/NR/article.asp?doi=b9nr00154a
News Story: Meridian Nanotechnology and Development News - Headlines for: 9/4/2009
http://www.rsc.org/Publishing/ChemTech/Volume/2009/11/calculated_risk.asp

5.7.5 Report Reviews Nanoparticle Risks and Regulation

A new paper in the Royal Society's Interface reviews the current state of nanoparticle risk research and regulation. The authors discuss "Lessons from History", "Nanotoxicology & Exposure" (concluding that "in many cases knowledge is sufficient to implement effective controls to minimise exposure and these should be put into place"), and "Knowledge gaps & the road to regulation." The 12-page paper lists 52 references

Military Implications:
[Same as previous on similar issues] Military personnel concerned with nanotech risk assessment should review the report as additional input to their own research.

Sources:
Nanoparticles, human health hazard and regulation
http://rsif.royalsocietypublishing.org/content/early/2009/08/31/rsif.2009.0252.focus.short?rss=1
Nanoparticles, Risk & Regulation
http://www.nanotech-now.com/news.cgi?story_id=34583

5.7.6 Researchers Call for Broad Approach to Nanotube Risk Assessment

Enrico Bergamaschi and colleagues of the Department of Clinical Medicine, at the University of Parma (Italy) Medical School suggest in a recent paper that "we need a much more detailed toxicological approach to hazard assessment before judgement regarding the long-term safety of carbon nanotubes can be made," according to a story in Nanowerk News. They point out that "carbon nanotubes are a recent invention … and so clinical and epidemiological evidence for any long-term effects they may have on human health are entirely lacking" and recommend that "we should combine experimental, clinical and epidemiological evidence … [and] set up preventive measures as well as assess the need to implement periodic health examinations of employees exposed to carbon nanotubes."

Military Implications:
[Same as previous on similar issues] Military personnel concerned with nanotech risk assessment should review this paper for input to their own research.

Sources:
"A toxicological approach to hazard assessment of carbon nanotubes: implications for workers' health protection" in Int. J. Environment and Health, 2009, 3, 249-263 (International Journal of Environment and Health (IJENVH); Volume 3 - Issue 3 – 2009)
http://www.inderscience.com/browse/index.php?journalID=142&year=2009&vol=3&issue=3

Carbon nanotube risk assessment
http://www.nanowerk.com/news/newsid=12653.php

5.7.7 Metallic Impurities Affect Carbon Nanotube Toxicity

According to a story in Highlights in Chemical Science, Martin Pumera and Yuji Miyahara of the National Institute for Materials Science, Ibaraki, Japan describe in a recent paper how "A main factor in nanotube toxicity are the metal contaminants that remain from manufacture, which are typically one to ten per cent by weight." In a test, only 100 ppm of iron was needed to dominate the ability of five nanotube samples to reduce or oxidize two biomarkers - hydrogen peroxide and hydrazine. The story goes on to point out that this value is significantly lower than the detection limits of the methods routinely used to assess nanotube purity.

Military Implications:

[Same as previous on similar issues] Military personnel responsible for nanotech risk assessment should heed this warning that current safety evaluation techniques may be deficient.

Sources:

How safe are carbon nanotubes?
http://www.rsc.org/Publishing/ChemScience/Volume/2009/11/carbon_nanotubes.asp
What amount of metallic impurities in carbon nanotubes is small enough not to dominate their redox properties?
http://www.rsc.org/Publishing/Journals/NR/article.asp?doi=b9nr00071b

5.7.8 New Inventory Lists More Than1000 Nanoproducts

The Wilson Center/Pew Trusts' Project on Emerging Nanotechnologies (PEN) has noted that its inventory of consumer nanoproducts has now exceeded 1000 entries. [Related item: *New Map of Nanotech Centers* in the August 2009 environmental security report.]

Military Implications:

Military personnel concerned with nanotech risk assessment should familiarize themselves with this resource, which has extensive search capabilities.

Sources:

Nano, nano everywhere. Not exactly, but we're working on it
http://www.smartplanet.com/business/blog/business-brains/nano-nano-everywhere-not-exactly-but-were-working-on-it/2021/
An inventory of nanotechnology-based consumer products currently on the market
http://www.nanotechproject.org/inventories/consumer/

5.7.9 First Global On-line Nanotech Conference to be Held 22-25 March, 2010

The organizers have announced the First On-line International Conference & Exhibition, "Nano-Globe", 22-25 March 2010. Access will be over any >28.8 kbps Internet connection, and the meeting will feature fully equipped "virtual rooms." According to the announcement, there will be some coverage of "Key solutions: Environmental and Health Risks," but no details are given.

Military Implications:
As more information becomes available, military personnel should consider "attending" this event.

Source:
"Nano-Globe" First On-line International Conference & Exhibition
www.nano-globe.com

5.7.10 OECD Nanomaterials Working Party to Meet in Paris in October
The OECD Working Party on Manufactured Nanomaterials (WPN) will hold its 6th meeting at the OECD headquarters in Paris on 28-30 October 2009 to discuss its achievements to date as well as to agree on the targets that need to be set in order to implement the Programme of Work 2009-2012. One of the topics will be how to continue progress on the Sponsorship Programme for the Testing of Manufactured Nanomaterials.

Military Implications:
Appropriate military personnel should contact the WPN to see if cooperation with them on nanotech risk assessment issues would be beneficial.

Sources:
Intro. to Working Party
http://www.oecd.org/site/0,3407,en_21571361_41212117_1_1_1_1_1,00.html
Programme of Work
http://www.olis.oecd.org/olis/2009doc.nsf/linkto/env-jm-mono(2009)22
Vision Statement
http://www.oecd.org/document/35/0,3343,en_21571361_41212117_42378531_1_1_1_1,00.html
Sponsorship Programme
http://www.oecd.org/document/47/0,3343,en_2649_37015404_41197295_1_1_1_1,00.html

5.7.11 New Paper Studies Public Perceptions of Nanotechnology
A study published in Nature Nanotechnology and reported by Nanowerk News found that public perceptions of nanotechnology do not follow previously seen patterns for new technological developments, and concludes that "Given the potential malleability of perceptions, novel methods for understanding future public responses to nanotechnologies will need to be developed."

Military Implications:
Military personnel concerned with public communication about new military technologies should review this work for useful ideas on new approaches for their operations.

Sources:
Anticipating the perceived risk of nanotechnologies
http://www.nature.com/nnano/journal/vaop/ncurrent/abs/nnano.2009.265.html
Nanotechnology is viewed favorably, but possible risks should be acknowledged
http://www.nanowerk.com/news/newsid=12706.php

5.7.12 New Grant in Wales for Nanotoxicology Research

Researchers at Swansea University's Centre for NanoHealth in the UK have been awarded £1 million to analyze the levels at which nanoparticles can be judged safe within cells. The four-year project, led by Prof. Huw Summers, Chair in Nanotechnology for Health at Swansea University, is closely linked to the Centre for NanoHealth initiative at the university.

Military Implications:

Military personnel concerned with nanotech risk evaluation should follow the work of this new project to benefit from its findings.

Source:

Centre for NanoHealth researchers to study safety of nanoparticles
http://www.nanowerk.com/news/newsid=12439.php